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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/613,328	07/02/2003	Michael V. Paukshto	A-72195/AJT/TJH	4295

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EXAMINER

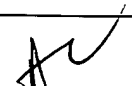
NGUYEN, THANH NHAN P

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 11/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/613,328	Applicant(s) PAUKSHTO ET AL.	
	Examiner (Nancy) Thanh-Nhan P Nguyen	Art Unit 2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7/02/03</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2, 19, and 21 are rejected under 35 U.S.C. 103(a) as being anticipated by Gibbons et al U.S. Patent No. 6,200,655 in view of Sugimori et al U.S. Patent 5,830,976.

Referring to claim 1, Gibbons et al discloses a liquid crystal display comprising: a front panel comprising a front alignment layer (3) having an alignment direction; a rear panel comprising a rear alignment layer (3) having an alignment direction; and a liquid crystal layer (5) between the front and rear alignment layers, [see figure 1], wherein the liquid crystal layer has a rotational twist angle of about 90.degree., [see column 1, lines 43-47];

Gibbons et al lacks of disclosing a pre-tilt angle of not more than 2.degree.

Sugimori et al discloses a pre-tilt angle of 1.degree. to 4.degree. in terms of the TN mode, [see column 1, lines 43-44], for the benefit of improving responsibility and securing bistability, [see column1, lines 42-43]. It has been judicially determined that overlapping ranges are at least obvious. This range, the pre-tilt angle of not more than 2. degree., would have been obvious to one of ordinary skill in the art. Therefore, at the time the invention was made, it would

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have been obvious to a person of ordinary skill in the art to have a pre-tilt angle of not more than 2.degree. for the benefit of improving responsibility and securing bistability.

Further, wherein the liquid crystal layer has the alignment, material and thickness of the liquid crystal layer are such that at the mid-point of the rotational twist, the direction of liquid crystal directors is inherently coincide with an off-normal viewing direction of the liquid crystal display.

Referring to claim 2, 19, 21 Gibbons et al discloses the liquid crystal display, wherein the front panel further comprises a front polarizer, and the rear panel further comprises a rear polarizer; the liquid crystal display further comprises an antireflection layer, a color filter, [see column 3, line 67; column 4, lines 1-5].

Claims 3-4, 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gibbons et al in view of Sugimori et al as discussed above, and further in view of Suzuki U.S. Patent Application Publication No. 2002/0089621.

Referring to claims 3 and 4, it was well known that placing the polarizers so that the transmission axes of the front and rear polarizers are perpendicular or parallel to each other was to have liquid crystal display operating in normal white mode or normal black mode. It is also evidenced by Suzuki, [see figure 8, and paragraph 0009]. Therefore, at the time the invention was made, it would have

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been obvious to a person of ordinary skill in the art to place the polarizers wherein the transmission axes of the front and rear polarizes are perpendicular or parallel to each other for the purpose of having liquid crystal display operating in normal white mode or normal black mode.

Referring to claims 10, since O-type polarizers were conventional polarizers to use for the benefit of being available, and having high transmission of light during open state. Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use O-type polarizers for the benefit of being available, and having high transmission of light during open state.

Referring to claim 11, Gibbons et al lacks of disclosing the transmission axis of the front O-type polarizer is parallel to the alignment direction of the front alignment layer, and the transmission axis of the rear O-type polarizer is parallel to the alignment direction of the rear alignment layer.

Suzuki discloses the transmission axis of the front O-type polarizer is parallel to the alignment direction of the front alignment layer, and the transmission axis of the rear O-type polarizer is parallel to the alignment direction of the rear alignment layer, [see paragraph 0017, and 0019].

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Referring to claim 12, Gibbons et al lacks of disclosing the transmission axis of the front polarizer and the alignment direction of the front alignment layer formed an angle at 90 degree.

Suzuki discloses the transmission axis of the front polarizer and the alignment direction of the front alignment layer formed an angle at 90 degree, [see paragraph 0017, and 0018].

Referring to claim 13, Gibbons et al lacks of disclosing the transmission axis of the rear polarizer and the alignment direction of the rear alignment layer form an angle at 0 degree.

Suzuki discloses the transmission axis of the rear polarizer and the alignment direction of the rear alignment layer form an angle at 0 degree, [see paragraph 0017, and 0018].

All of the above listed features of claims 11-13 are described in Suzuki's disclosure as being for the benefit of having high contrast in liquid crystal display, [see paragraph 0027]. Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use O-type / E-type polarizers, and arrange the transmission axes of the polarizers and the alignment direction of the alignment layers in certain ways, as described above, for the benefit of having high contrast in liquid crystal display.

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Claims 5-9, and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gibbons et al in view of Sugimori et al as discussed above, and further in view of Bobrov et al "Manufacturing of a Thin-Film LCD".

Claims 5-9 limitations are met in "Manufacturing of a Thin-Film LCD", secondary reference by Bobrov et al.

Referring to claim 14, Gibbons et al lacks of disclosing the liquid crystal display, wherein at least one of the front and rear polarizers is an internal polarizer.

Bobrov et al discloses the liquid crystal display, wherein at least one of the front and rear polarizers is an internal polarizer, [see figure 1], for the benefit of high contrast and high viewing angle cone in liquid crystal display, [see Introduction, lines 29-32]. Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use the thin crystal film as internal polarizer for the benefit of high contrast and high viewing angle cone in liquid crystal display.

Referring to claim 15, it was well known to use thin crystal film to replace the alignment layer, and perform both functions polarization and liquid crystal alignment for the benefit of reducing number of layers/ thickness in liquid crystal display. Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use thin crystal film to replace

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alignment layer for the benefit of reducing number of layers/ thickness in liquid crystal display.

Claims 16-18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gibbons et al in view of Sugimori et al, and further in view of Kaneko U.S. Patent Application Publication No. 2002/0145689.

Referring to claims 16-18, Gibbons et al lacks of disclosing the liquid crystal display further comprises a reflective layer, wherein the reflective layer is semitransparent; and a backlight system.

Kaneko discloses the liquid crystal display further comprises a reflective layer, wherein the reflective layer is semitransparent (9 and 30); and a backlight system (16), [see figure 1], for the benefit of using the liquid crystal display as a transfective liquid crystal display to save power and improve brightness. Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use semitransparent reflective layer, and a backlight system in liquid crystal display for the benefit of saving power and improving brightness.

Referring to claim 20, Gibbons et al lacks of disclosing the liquid crystal display further comprises a light-scattering layer.

Kaneko discloses the liquid crystal display further comprises a light-scattering layer (15) for the benefit of improving high contrast and brightness. Therefore, at the time the invention was made, it would have been obvious to a

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person of ordinary skill in the art to have light-scattering layer in liquid crystal for the benefit of improving high contrast and brightness.

Conclusion

Gibbons et al U.S. Patent 6,200,655 discloses the liquid crystal layer has a rotational twist angle of about 90 degree.

Sugimori et al U.S. Patent 5,830,976 discloses the pre-tilt angle of 1.degree. to 4.degree. in terms of the TN mode.

Suzuki U.S. Patent Application Publication No. 2002/0089621 discloses the E-type polarizers / O-type polarizers and the alignment direction of the alignment layer corresponds to each others with certain arrangement (perpendicular / parallel).

Bobrov et al "Manufacturing of a Thin-Film LCD", discloses the thin crystal film is formed from a lyotropic liquid crystal based on at least one dichroic dye, and is treated with ions of bi- or/and trivalent metals.

Kaneko U.S. Patent Application Publication No. 2002/0145689 discloses the transfective liquid crystal further comprises the light scattering layer.

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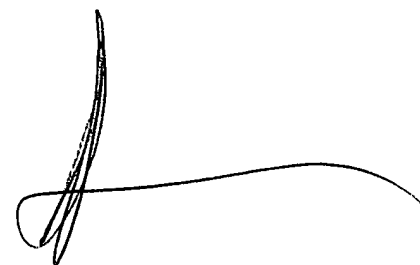
Any inquiry concerning this communication or earlier communications from the examiner should be directed to (Nancy) Thanh-Nhan P Nguyen whose telephone number is 571-272-1673. The examiner can normally be reached on M-F/9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on 571-272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

(Nancy) Thanh-Nhan P Nguyen
Examiner
Art Unit 2871

TN

A handwritten signature in black ink, consisting of a stylized 'K' followed by a long horizontal line that curves upwards at the end.

**KENNETH PARKER
PRIMARY EXAMINER**